

**REMARKS**

In accordance with the foregoing, the specification and claims 1, 2, 3 and 10 have been amended. Claim 8 has been cancelled. Claims 13-18 have been added. Claims 4-7, 11, and 12 are withdrawn following the restriction requirement. No new matter has been added. Claims 1-3 and 9-18 are pending and under consideration.

The specification has been amended to include the name of the trademark "AXCELIS GSD<sup>TM</sup>" written with capital letters and a trademark symbol. Claim 1 has been amended to improve the form by consistently reciting "parameter output signal"; the scope of the claim has not been changed, the claim amendment not being a response to a rejection.

**CLAIM REJECTIONS UNDER 35 U.S.C. § 112**

In the Office Action, claims 2, 3, and 8 are rejected under 35 U.S.C. §112 ¶ 1 and/or ¶2. Claim 8 has been cancelled.

Claim 2 is rejected as being indefinite relative to the following claimed feature: "the control output is a beam line gas output". Claim 2 has been amended to recite "the control output is connected to a beam line gas output".

Claim 3 is rejected for both lack of enablement and as being indefinite relative to the following claimed feature: "the beam line gas output is connected to a beam line gas device which is capped." The phrase "which is capped" has been removed. The claim has been further amended to recite "an unused beam line device". Antecedent basis for "unused" can be found, for example, in paragraph [0013] of the application.

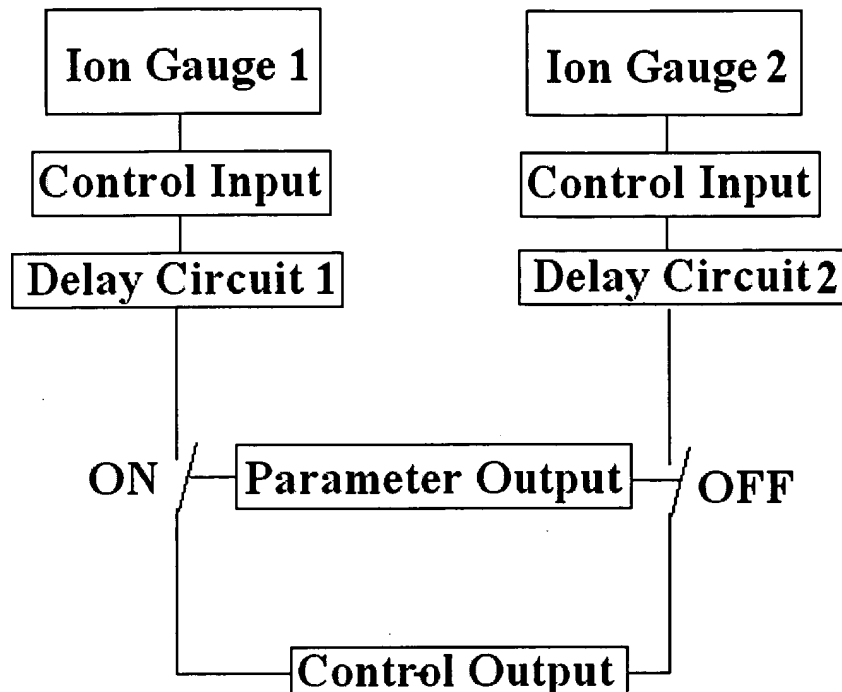
The amendments of claim 2 and 3 are fully supported by the originally filed specification and claims, for example, FIG. 1.

In view of the amendments to the claims, Applicants believe that the rejections of claims 2 and 3 are overcome.

**CLAIM REJECTIONS UNDER 35 U.S.C. § 103**

Claims 1-3 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,111,042 to Sullivan et al. (herein after "Sullivan"), in view of U.S. Patent No.6,589,351 to Bruce et al. ("Bruce") in view of Granville-Philips vacuum gauge controller manual ("GP manual").

Applicants respectfully submit that none of the cited references teach or suggest the ion gauge controller having the structure and features described in claim 1. For the convenience of the Examiner, Applicants present the following sketch illustrating only the elements of the ion gauge controller as recited in claim 1.



As recited in claim 1, the "ion gauge controller to supply power to, and obtain information corresponding to a number of ions from, one of the ion gauges," includes:

"a pair of control inputs respectively associated with the pair of ion gauges, such that when a control signal is supplied to one of the control inputs, the ion gauge controller supplies power to, and obtains information corresponding to a number of ions from, the respectively associated ion gauge;"

"a control output to produce the control signal when either of the ion gauges is activated;"

"a parameter output to selectively produce a parameter signal based on a recipe selection;"

"a first delay circuit to connect the control output to one of the control inputs, after a delay, when the parameter output is on;" and

“a second delay circuit to connect the control output to the other of the control inputs, after a delay, when the parameter output is off.”

In the Office Action, it is alleged that Bruce and the GP Manual disclose the ion gauge controller. The Examiner cites column 12, lines 47-55, which states: “A dual-element ion gauge 55 provided with a manual shutoff valve 57 is preferably used to measure the vacuum pressure within the coating chamber 12. By using a gauge 55 with independently operable elements, either element can be selected for use without interrupting the coating operation. Alternatively, two ion gauges separated by a valve could be provided, so that either gauge could be used or switched without interrupting the coating operation.”

The indicated portion of Bruce discloses that the gauge 55 with “independent operable elements” can be switched “without interrupting the coating operation”. Bruce does not disclose either an ion gauge controller or the “remote control inputs” as alleged in the Office Action. Based on Bruce, one may even consider to perform the switching between the two gauges manually. The switching circuit as recited in claim 1 includes the pair of control inputs, the control output, the parameter output and the first and second delay circuits as illustrated above.

Because Bruce et al. does not suggest most of limitations for which it is cited, it appears that the Examiner has a difficult time understanding the Invention. Of course, it is important an aspect that the ion gauges be controlled. However, perhaps it is more important how the ion gauges are controlled. The present Invention uses a parameter output and a control output to control the ion gauges. One potential benefit of using the claimed configuration is that it may enable an ion gauge to be added to an existing implanter. The Examiner is referred to the specification. Only the claimed connections may be required to add an ion gauge. As described in the specification, it may be possible to control the ion gauges (and route connections into and out of the sensitive environment) using and unused connection on the implanter. For example, as described on the specification, the beam line gas device may not be required for important types of ion implantation. The unused connection can be used for the additional ion gauge.

Bruce et al. does not disclose any of claimed connections. Furthermore, because Bruce et al. relates to a newly designed device, there would be no need to use the claimed ion gauge controller. There is no retrofitting mentioned or suggested in Bruce et al. Accordingly, Bruce et al. could use sophisticated circuitry to control the gauges. Bruce et al. would not use the claimed ion gauge controller because there is no need for it in the reference.

Further, the GP Manual is relied upon to disclose the delay circuits. The GP Manual discloses a delay in a switching protocol, but not a delay circuit and specifically, not the first and second delay circuits connected as recited in claim 1. However, even if arguendo the GP Manual does disclose the delay circuits, Sullivan, Bruce and the GP Manual still do not teach, suggest or make obvious the ion gauge controller having the structure recited in claim 1 including the pair of control inputs, the control output, the parameter output and the first and second delay circuits, connected and functioning as recited in claim 1.

Dependent claims 2, 3 and 9 are patentable at least by inheriting patentable features from independent claim 1.

The Office Action gives no reasons for the rejection of claim 10. Not addressing the elements and features of independent claim 10 renders the rejection of claim 10 defective according to 37 C.F.R. 1.104. Applicants respectfully submit that claim 10 patentably distinguishes over the cited prior art.

#### **NEW CLAIMS 13-18**

New claim 13 is an alternative recitation of the system in claim 1 and is fully supported by the originally filed specification and claims, for example, FIG. 1 and claim 1. Claim 13 is patentable at least because it recites "a first and a second pressure sensors to measure pressure around a location where the ions shot by the beam gun hit the semiconductor wafer, wherein the first pressure sensor measures pressures in a first predetermined range of pressures, and a second pressure sensor measures pressure within a second predetermined range of pressures" and the pressure sensor controller having same structure as the ion gauge controller recited in claim 1. The first and second pressure sensors and the pressure sensor controller having the features recited in claim 13 are not taught or suggested by the prior art. Dependent claims 14-18 are patentable because the claims depend upon patentable base claim 13 and recite additional patentable features.

#### **CONCLUSION**

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

Serial No. 10/697,656

Docket No.: 1693.1016

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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